JS 10/22/21
RJA 2/17/22

Fate Report for Case # P-18-0272

Fate
Summary Statement

Fate Summary Statement: P-18-0272
FATE:
MW = [redacted] with [redacted] < 500 and [redacted] < 1000
[redacted] with MP < 25 °C
(E)
S = Reacts slowly / < 0.001 g/L at 25 °C (E)
Hydrolysis
half-life = wk-mo
VP < 1.0E-6 torr at 25 °C (E)
BP > 400 °C
(E)
H < 1.00E-8 (E)
POTW removal (%) = PMN 90 via sorption and
hydrolysis; then
Hyd Pdt [redacted] 90 via sorption and biodeg;

Hyd Pdt [redacted] 90 via sorption
Time for complete ultimate
aerobic biodeg = PMN wk-mo; Hyd Pdt [redacted] wk;
Hyd Pdt [redacted]
> mo
Sorption to soils/sediments = PMN strong; Hyd Pdt [redacted]
strong;
Hyd Pdt [redacted] strong
PBT Potential: PMN P1-2B1; Hyd Pdt
[redacted] P2B1; Hyd Pdt [redacted] P3B*(low)
*CEB FATE: Migration to
ground water = PMN slow; Hyd Pdt [redacted] slow;
Hyd Pdt [redacted]
slow

PMN Material:
Overall wastewater treatment removal is 90%
via sorption and slow hydrolysis (hydrolysis half-life: weeks to months).

Sorption to sludge is strong based on data for [redacted]
polymers.
Air Stripping (Volatilization to air) is negligible based on
data for [redacted] polymers.
Removal by biodegradation
in wastewater treatment is negligible based on data for [redacted]

[redacted] polymers.
The aerobic aquatic biodegradation half-life is
weeks to months based on data for [redacted] polymers.

The anaerobic aquatic biodegradation half-life is weeks to months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater than or equal to the aerobic biodegradation half-life.
Sorption to soil and sediment is
strong based on data for [redacted] polymers.
Migration
to groundwater is slow based on data for [redacted] polymers.

PMN Material:
Low to Moderate Persistence (P1-P2) is based on the
slow hydrolysis (hydrolysis half-life: weeks to months) and data for [redacted] polymers.
Low Bioaccumulation potential (B1) is
based on the slow hydrolysis (hydrolysis half-life: weeks to months).

Hydrolysis Product [redacted]
Overall wastewater treatment
removal is 90% via biodegradation.
Sorption to sludge is strong based
on data for fatty acids and similar cases of [redacted] degradants.

Air Stripping (Volatilization to air) is negligible based on data for
fatty acids and similar cases of [redacted] degradants.
Removal by
biodegradation in wastewater treatment is high based on data for fatty
acids and similar cases of [redacted] degradants.
The aerobic
aquatic biodegradation half-life is weeks based on data for fatty acids
and similar cases of [redacted] degradants.
The anaerobic aquatic
biodegradation half-life is months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater or equal to the aerobic biodegradation half-life.

Sorption to soil and sediment is strong based
on data for fatty acids and similar cases of [redacted] degradants.

Migration to groundwater is slow based on data for fatty acids and
similar cases of [redacted] degradants.
Hydrolysis Product [redacted]
[redacted]):

Moderate Persistence (P2) is based on the estimated anaerobic biodegradation half-life and data for fatty acids.
Low
Bioaccumulation potential (B1) is based on data for fatty acids in addition to metabolism.
Hydrolysis Product ([redacted]
Degradant):
Overall wastewater treatment removal is 90% via sorption.

Sorption to sludge is strong based on data for metal oxides
Air
Stripping (Volatilization to air) is negligible based on data for metal oxides
Removal by biodegradation in wastewater treatment is negligible based on data for metal oxides
The aerobic aquatic biodegradation
half-life is greater than months based on data for metal oxides
The
anaerobic aquatic biodegradation half-life is greater than months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater or equal to the aerobic biodegradation half-life.

Sorption to soil and sediment is strong based on data for metal oxides
Migration to groundwater is slow based on data for metal oxides

Hydrolysis Product ([redacted] Degradant):
High Persistence
(P3) is based on the estimated anaerobic biodegradation half-life and data for metal oxides.
Bioaccumulation potential (B*-low) is based on
data for metal oxides. The substance does not fit in the standard framework of the model.
Bioconcentration/Bioaccumulation factor to be
put into E-Fast: N/A.

CBI: [redacted]
Fate Assessor: Wong, Edmund
SMILES: [redacted]

Physical Properties

Property	Measured/Calculated Value	EPI
Molecular Form:	[redacted]	
Molecular Wt.:		
% < 500:		
% < 1000:		

Property	Measured Value	Method	Estimated Value	Method	EPI
Melting Point:					
Boiling Point:					
BP Pressure:					
Vapor Pressure:			<0.000001		
Water Solubility:			<0.000001 / Reacts slowly		
Log P:					
Log Kow:					
Log Koc:					
Log BCF:					
Henry's Law:					

pH:	
pH Comment:	

Fate Analysis

Hydrolysis (t1/2, da):	Volatilization (t1/2) - River (hr):	Volatilization (t1/2) - Lake (da):
Atm Ox Potential (t1/2)OH (hr):	Atm Ox Potential (t1/2)O3 (hr):	Atm Ox Potential (t1/2) Total (hr):

MITI Linear:		**MITI NonLinear:**	
Biodeg Linear:		**Biodeg NonLinear:**	
Biodeg Survey ult:		**Biodeg Survey Prim:**	
STP (% removal) Total:		**STP (% removal) Biodeg:**	
STP (% removal) Ads:		**STP (% removal) Air:**	

Rationales

Removal in Wastewater Treatment:	
Atmospheric Oxidation:	
Hydrolysis:	
Photolysis:	
Aerobic Biodegradation:	
Anaerobic Biodegradation:	
Sorption to Soil and Sediment:	
Migration to Groundwater:	
Persistence - Air:	
Persistence - Water:	
Volatilization from Water:	
Soil:	
Sediment:	
Other:	
Standard:	
Bioaccumulation:	

PBT Ratings

Persistence	Bioaccumulation	Toxicity	PBT Comments
1-2	1		PMN

Persistence	Bioaccumulation	Toxicity	PBT Comments
2	1		Hyd Pdt [redacted]
3	*		Hyd Pdt [redacted], B*(low)

Exposure-Based Testing

Exposure-Based Testing:	

Fate Ratings
Removal in WWT/POTW (Overall):

Removal in WWT/POTW (Overall):	90;90;90 PMN;Hyd Pdt [redacted] Hyd Pdt [redacted]

Condition	Rating Values	Rating Description				Comment
		1	2	3	4	
WWT/POTW Sorption:	3;3;3	Low	Moderate	Strong	V. Strong	PMN;Hyd Pdt [redacted];Hyd Pdt [redacted]
WWT/POTW Stripping:	4;4;4	Extensive	Moderate	Low	Negligible	PMN;Hyd Pdt [redacted];Hyd Pdt [redacted]
Biodegradation Removal:	4;2;4	Unknown	High	Moderate	Negligible	PMN;Hyd Pdt [redacted];Hyd Pdt [redacted]
Biodegradation Destruction:		Unknown	Complete	Partial	—	
Aerobic Biodeg Ult:	2-3;2;4	<= Days	Weeks	Months	> Months	PMN;Hyd Pdt [redacted];Hyd Pdt [redacted]

Condition	Rating Values	Rating Description				Comment
		1	2	3	4	
Aerobic Biodeg Prim:		<= Days	Weeks	Months	> Months	
Anaerobic Biodeg Ult:	2-3;3;4	<= Days	Weeks	Months	> Months	PMN;Hyd Pdt [redacted];Hyd Pdt [redacted]
Anaerobic Biodeg Prim:		<= Days	Weeks	Months	> Months	
Hydrolysis (t1/2 at pH 7,25C) A:	3.5-4	<= Minutes	Hours	Days	>= Months	[redacted]
Hydrolysis (t1/2 at pH 7,25C) B:		<= Minutes	Hours	Days	>= Months	
Sorption to Soils/Sediments:	2;2;2	V. Strong	Strong	Moderate	Low	PMN;Hyd Pdt [redacted];Hyd Pdt [redacted]
Migration to Ground Water:	2;2;2	Negligible	Slow	Moderate	Rapid	PMN;Hyd Pdt [redacted];Hyd Pdt [redacted]
Photolysis A, Direct:		Negligible	Slow	Moderate	Rapid	
Photolysis B, Indirect:		Negligible	Slow	Moderate	Rapid	
Atmospheric Ox A, OH:		Negligible	Slow	Moderate	Rapid	
Atmospheric Ox B, O3:		Negligible	Slow	Moderate	Rapid	

Bio Comments:

Bio Comments: The PMN material may hydrolyze with a half-life of weeks to months to give [redacted]. The hydrolysis will be inhibited due to the low water solubility, but acidic/basic conditions may increase the rate of hydrolysis.

Fate Comments:

Fate Comments:

Comments/Telephone Log

Artifact	Update/Upload Time